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TRANSACTIONS
OF THE
KANSAS
ACADEMY OF SCIENCE.
VOLUME XXV.

CONTAINS
LIST OF OFFICERS AND PAST PRESIDENTS; MEMBERSHIP LIST
JANUARY 1, 1913; MINUTES OF FORTY-FOURTH AND
FORTY-FIFTH ANNUAL MEETINGS; PRESIDENTS'
ADDRESSES; SOME PAPERS READ.

December 23 and 24, 1912.

STATE PRINTING OFFICE:
TOPEKA, 1913.

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OFFICERS OF THE ACADEMY, 1913.

<i>President</i> , A. J. SMITH	Emporia.
<i>Vice President</i> , W. A. HARSHBARGER	Topeka.
<i>Vice President</i> , J. A. G. SHIRK	Pittsburg.
<i>Treasurer</i> , L. D. HAVENHILL	Lawrence.
<i>Secretary</i> , J. T. LOVEWELL	Topeka.

EXECUTIVE COUNCIL.

Ex officio the PRESIDENT, TREASURER and SECRETARY.

Elective for 1913.

E. H. S. BAILEY.

S. J. CRUMBINE.

F. B. DAINS.

J. T. WILLARD.

MEMBERSHIP OF THE ACADEMY.

January 1, 1913.

Dates signify date of election to membership in the Academy.

HONORARY MEMBERS.

G. P. Grimsley, Ph. D., 1904, Martinsburg, W. Va.

Edw. L. Nichols, Ph. D., 1897, Cornell Univ., Ithaca, N. Y.

W. S. Franklin, Sc. D., Lehigh Univ., South Bethlehem, Pa.

Geo. Wagner, Ph. D., 1904, Univ. of Wisconsin, Madison, Wis.

S. W. Williston, A. M., M. D., Ph. D., 1902, professor of paleontology, Univ. of Chicago, Chicago, Ill.

ASSOCIATE MEMBER.

Mr. R. J. Brown, 1903, Leavenworth.

LIFE MEMBERS.

E. H. S. Bailey, Ph. D., 1883, Univ. of Kansas, Lawrence.

Edward Bartow, Ph. D., 1898, director of water survey, Urbana, Ill.

Joshua William Beede, Ph. D., 1894, associate professor of geology, Bloomington, Ind.

F. W. Bushong, Sc. D., 1896, Mellon Institute, Univ. of Pittsburg, Pa.

F. W. Cragin, Ph. D., 1880, economic, geologic and historical research, Colorado Springs, Colo.

Lewis Lindsay Dyche, M. S., 1881, professor of systematic zoölogy and curator of birds, mammals and fishes, state fish and game warden, Univ. of Kansas, Lawrence.

Geo. H. Failyer, M. Sc., 1879, Manhattan.

E. C. Franklin, Ph. D., 1884, Stanford Univ., Palo Alto, Cal.

I. D. Graham, 1879, Live Stock Com., Panama Ex., San Francisco, Cal.

Wm Ashbrook Harshbarger, B. S. 1900, professor of mathematics, Washburn Coll., Topeka.

Erasmus Haworth, Ph. D., 1882, state geologist, Univ. of Kansas, Lawrence.

- Warren Knaus, M. Sc., 1884, entomologist, editor and publisher, McPherson.
D. E. Lantz, M. Sc., 1887, biological survey, Washington, D. C.
J. T. Lovewell, Ph. D., 1878, chemist, Topeka.
F. O. Marvin, A. M., 1884, Univ. of Kansas, Lawrence.
Ephraim Miller, A. B., A. M., Ph. D., 1873, Pasadena, Cal.
E. A. Popenoe, A. M., 1872, entomologist, Topeka.
L. E. Sayre, Ph. M., 1885, Univ. of Kansas, Lawrence.
Alva J. Smith, 1903, city engineer, Emporia.
*B. B. Smyth, 1880, curator Goss Ornithological Collection, Topeka.
Mrs. L. C. R. Smyth, M. S., Ph. D., 1902, curator of Goss Ornithological Collection, Topeka.
C. H. Sternberg, 1896, explorer and collector, Lawrence.
A. H. Thompson, D. D. S., 1873, Topeka.
M. L. Ward, D. D., 1880, Ottawa Univ., Ottawa.
J. T. Willard, M. S., 1883, Kansas Agr. Coll., Manhattan.

ANNUAL MEMBERS.

- Frank G. Agrelius, A. M., 1905, State Normal School, Emporia.
H. C. Allen, 1904, Univ. of Kansas, Lawrence.
John J. Arthur, 1904, Topeka.
Wm. R. Arthur, B. A., 1903, dean of law school, Washburn Coll., Topeka.
W. M. Bailey, 1906, teacher, Holton.
Harvey W. Baker, 1902, florist, White Church.
Benj. P. Baker, 1909, student Agr. Coll., Manhattan.
Elam Bartholemew, M. S., 1905, mycologist, Stockton.
W. J. Baumgartner, 1904, professor of zoölogy and histology, Univ. of Kansas, Lawrence.
Frank G. Bedell, 1904, Dodge City.
F. H. Billings, Ph. D., 1909, Univ. of Kansas, Lawrence.
Julius Brandt, 1907, Bethany Coll., Lindsborg.
H. H. Braucher, 1907, teacher, K. S. N., Emporia.
Frank. P. Brock, 1911, ind. research, Univ. of Kansas, Lawrence.
E. W. Brown, B. S., 1909, Chehalis, Wash.
Edw. Bumgardner, M. D., Univ. of Kansas, Lawrence.
L. D. Bushnell, 1909, professor of bacteriology, Agr. Coll., Manhattan.
H. P. Cady, Ph. D., 1904, professor chemistry, Univ. of Kansas, Lawrence.
M. E. Canty, 1903, Buffalo, Kan.
I. D. Cardiff, Ph. D., 1909, professor of botany, State Agr. Coll., Pullman, Wash.
V. B. Caris, 1911, professor mathematics, M. T. S., Pittsburg.
F. P. Clark, M. D., 1909, Univ. Hospital, Kansas City, Kan.
W. A. Cook, M. S., 1907, Baker Univ., Baldwin.
R. A. Cooley, 1910, Ag. Expt. Station, Bozeman, Mont.
Rev. John T. Copley, 1903, clergyman, Manhattan.
E. G. Corwine, 1905, Mulvane.
E. F. Crevecoeur, 1899, entomologist, Onaga.
S. J. Cruikshank, M. D., 1909, secretary State Board of Health, Topeka.
B. J. Dalton, C. E., 1909, Univ. of Kansas, Lawrence.
Geo. A. Dean, M. S., 1912, professor entomology, Manhattan.
O. P. Dellinger, professor biology, M. T. S., Pittsburg.

*Deceased.

- Frank Burnett Dains Ph. D., 1902, professor of chemistry, Univ. of Kansas, Lawrence.
- Emil O. Deere, A. M., 1905, Bethany Coll., Lindsborg.
- James Dickson, A. M., 1904, High School, Topeka.
- Robt. K. Duncan, B. A., 1906, professor of industrial chemistry, Univ. of Pittsburg, Grand Boulevard, Pittsburg, Pa.
- R. B. Dunlevy, M. A., 1896, S. W. Kansas Coll., Winfield.
- E. H. Dunmire, B. S., 1895, Lawrence.
- J. W. Eby, 1903, banker, Harvard.
- C. W. Edmondson, Ph. D., 1909, professor of geology and histology, Eugene, Ore.
- H. W. Emerson, B. S., 1904, Univ. of Kansas, Lawrence.
- B. F. Eyer, B. S., E. E., 1904, professor of electrical engineering, Manhattan.
- T. L. Eyerly, 1906, high school, department of physiography, Dallas, Tex.
- Fred. Faragher, A. B., 1904, with Alden Spear's Sons Co., Chicago, Ill.
- A. O. Garrett, 1901, teacher high school, Salt Lake City, Utah.
- Roy W. Gragg, 1907, accountant, Bartlesville, Okla.
- A. A. Graham, 1910, lawyer, Topeka.
- O. S. Groner, Sc. M., 1907, professor of chemistry, Ottawa, Univ., Ottawa.
- Mary Herman, Ph. D., 1912, Agr. Coll., Manhattan.
- H. J. Harnly, B. S., 1903, professor, McPherson Coll., McPherson.
- L. D. Havenhill, D. Phar., 1904, professor of pharmaceutical chemistry, Univ. of Kansas, Lawrence.
- Thomas J. Headlee, Ph. D., 1907, professor of zoölogy and entomology, Rutgers Coll., New Brunswick, N. J.
- W. C. Hoad, B. S., 1904, Univ. of Kansas, Lawrence.
- W. F. Hoyt, A. M., 1902, State Normal School, Neb.
- Albert K. Hubbard, Ph. D., 1904, Univ. of Kansas, Lawrence.
- I. W. Humphrey, 1912, Pittsburg, Univ., Pa.
- Thomas M. Iden, 1897, State Normal School, Emporia.
- H. Louis Jackson, B. S., 1909, state food analyst, Univ. of Kansas, Lawrence.
- E. C. Jerman 1911, electrician, Topeka.
- *John J. Jewett, 1902, physicist, San Diego, Cal.
- A. W. Jones, B. S., 1894, Wesleyan Univ., Salina.
- F. E. Jones, 1909, manual training school, Lawrence.
- W. H. Keller, 1898, high school, Emporia.
- H. H. King, A. B., A. M., 1909, asst. professor of chemistry, Agr. Coll., Manhattan.
- Leslie A. Kenoyer, 1906, Independence.
- Harry L. Kent, 1904, nature study, Agr. Coll., Manhattan.
- John H. Klopfer, 1904, collector and mining expert, Topeka.
- Pierce Larkin, A. B., 1902, geology, Univ. Norman, Okla.
- R. D. Landrum, B. S., 1909, Lisk Manufacturing Co., Canandaigua, N. Y.
- Marcus A. Low, 1906, attorney C. R. I. & P. railway, Topeka.
- L. A. Lowther, 1907, superintendent of schools, Emporia.
- R. Matthews, D. D. S., 1898, dental surgery, Wichita.
- J. W. McCulloch, 1911, field agent, Agr. Coll., Manhattan.

- David F. McFarland, Ph. D., State Univ., Urbana, Ill.
J. M. McWharf, M. D., 1902, physician, Ottawa.
Grace R. Meeker, 1899, botanist, Ottawa.
C. F. Menninger, M. D., 1903, physician, Topeka.
S. T. Millard, M. D., 1909, physician and surgeon, Topeka.
W. L. Moodie, 1906, State Normal, Bellingham, Wash.
Roy L. Moodie, Ph. D., 1909, instructor, Baylor Univ. Dallas, Tex.
Merle M. Moore, 1909, student, Ottawa Univ., Ottawa.
Celia Mulvehill, A. B., 1911, high school, Pittsburg.
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C. A. Nash, 1907, Univ. of Kansas, Lawrence.
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N. P. Neilson, 1906, architect, Topeka.
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J. B. Parker, 1909, Agr. Coll., Manhattan.
Frank Patrick, 1903, microscopist, Kansas City, Mo.
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L. M. Peace, A. B., 1904, Univ. of Kansas, Lawrence.
Arthur D. Pitcher, A. M., 1906, Univ. of Kansas, Lawrence.
L. M. Plairs, asst. entomologist, Agr. Coll., Manhattan.
L. M. Powell, M. D., 1906, physician, Topeka.
Silas Eber Price, D. D., president Ottawa Univ., Ottawa.
Charles Smith Prosser, D. Sc., Ph. D., 1892, educator and geologist, Columbus, Ohio.
Wm. S. Prout, 1904, M. D., Emmet, Kan.
Albert B. Reagan, 1904, director of Indian school, Orr, Minn.
L. J. Reiser, 1911, chemist, Topeka.
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H. A. Rice, C. E., 1909, asst. professor of engineering, Univ. of Kansas, Lawrence.
B. R. Rogers, D. V., 1907, Agr. Coll., Manhattan.
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J. C. Russell, 1911, professor of agricultural chemistry, Univ. of Minnesota, Minneapolis, Minn.
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D. C. Schaffner, 1903, Coll. of Emporia, Emporia.
John H. Schaffner, A. M., M. S., 1902, professor of botany, Univ. of Ohio, Columbus, Ohio.
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Miriam Sheldon, A. M., 1906, Univ. of Kansas, Lawrence.
Edwin Taylor Shelly, M. D., 1902, physician, Atchison.
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- Ralph C. Shuey, 1905, Univ. of Pittsburg, Pa.
Eugene G. Smyth, 1901, entomology, Dept. Agr., Santa Rita, P. R.
S. G. Stewart, M. D., 1904, physician and surgeon, Topeka.
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E. F. Stimpson, 1904, Univ. of Kansas, Lawrence.
M. C. Tanquary, Ph. D., 1912, instructor of entomology, Ag. Coll., Manhattan.
E. L. Tague, A. M., professor of chemistry, Washburn Coll., Topeka.
Edgar H. Thomas, 1907, State Normal School, Emporia.
F. J. Titt, B. S., 1898, Kingfisher Coll., Kingfisher, Okla.
J. E. Todd, A. M., 1907, professor of geology, Univ. of Kansas, Lawrence.
David Train, 1907, Bethany Coll., Lindsborg.
E. S. Tucker, 1904, associate professor of entomology, Dept. Agriculture, Baton Rouge, La.
W. H. Twenhofel, 1910, professor of geology and paleontology, Univ. of Kansas, Lawrence.
Edith M. Twiss, Ph. D., 1910, dean of women, Washburn Coll., Topeka.
W. A. Van Voris, 1907, State Normal School, Emporia.
P. F. Walker, 1905, Univ. of Kansas, Lawrence.
J. D. Walters, M. S., 1894, Agr. Coll., Manhattan.
E. C. Warfel, A. M., 1909, lawyer, Wamego.
H. J. Waters, B. Sc., 1909, president Agr. Coll., Manhattan.
E. R. Weidlein, 1911, Univ. of Pittsburg, Pa.
J. E. Welin, A. M., M. S., 1899, professor of chemistry, Bethany Coll., Lindsborg.
Archie J. Weith, 1906, Lawrence, Kan.
J. B. Whelan, 1909, professor of chemistry, Univ. of Kansas, Lawrence.
E. A. White, 1909, chemist, Kansas City, Mo.
Stanley D. Wilson, B. A., 1910, instructor in chemistry, Univ. of Chicago, Chicago, Ill.
W. B. Wilson, B. S., M. S., 1903, professor of biology, Ottawa Univ., Ottawa.
John A. Wilson, 1909, science teacher, Ely, Minn.
C. H. Withington, B. S., 1903, high school, Topeka.
T. M. Wood, B. S., 1909, instructor, M. T. S., Pittsburg.
H. I. Woods, M. S., 1902, professor physics and astronomy, Washburn Coll., Topeka.
Lyman C. Wooster, Ph. D., 1897, State Normal School, Emporia.
J. A. Yates, M. S., 1897, geologist, M. T. S., Pittsburg.
C. C. Young, 1909, chemist State Water Survey, Lawrence.

II.

CHEMICAL AND PHYSICAL PAPERS.

1. "ON THE POWDERED SUGAR OF COMMERCE."
By E. H. S. BAILEY and H. L. JACKSON.
2. "NOSTRUMS."
By L. E. SAYRE.
3. "ON THE REACTIONS OF THE FORMAMIDINES."
By F. B. DAINS and E. L. GRIFFIN.
4. "STANDARDIZATION OF INSECTICIDES AND DISINFECTANTS."
By L. E. SAYRE.

III.

GEOLOGICAL PAPERS.

1. "NOTES ON THE MORaine OF THE KANSAS GLACIER SOUTHWEST OF TOPEKA."
By L. C. WOOSTER.
2. "EXPEDITIONS TO THE MIOCENE OF WYOMING AND THE CHALK BEDS OF KANSAS."
By CHARLES H. STERNBERG.

IV.

BIOLOGICAL PAPERS.

1. "FORMALDEHYDE GAS NOT EFFECTIVE UPON FLIES."
By E. S. TUCKER, Baton Rouge, La.
2. "FURTHER RECORDS OF INSECTS PERSONALLY COLLECTED IN KANSAS AND COLORADO."
By E. S. TUCKER, Baton Rouge, La.
3. "PROVISIONAL CATALOGUE OF THE FLORA OF KANSAS. PART II.—GYMNOSPERMS AND MONOCOTYLS."
By BERNARD B. SMYTH, and L. C. R. SMYTH.
4. "A PARTIAL KEY TO THE GENERA OF NORTH AMERICAN JASSOIDEA."
By S. E. CRUMB.
5. "INSECTICIDES."
By L. E. SAYRE.
6. "A SYSTEM OF NOTATIONS APPLIED TO ENTOMOLOGICAL ACCESSIONS."
By E. S. TUCKER.
7. "BITROPISM."
By LYMAN C. WOOSTER.

V.

MISCELLANEOUS PAPERS.

1. "ON THE IMMUNITY OF THE KANSAS BOTTOM GROUND WATERS TO
CHANGES IN THE COMPOSITION OF THE KANSAS RIVER WATER."
By Prof. C. C. YOUNG.
2. "THE COMMON MOLE—RUNWAY STUDIES."
By THEO. H. SCHEFFER, U. S. Biological Survey.
3. "THE LONGEVITY OF YALE GRADUATES."
By J. T. LOVEWELL.
4. "HAS THE QUALITY OF DRUGS IMPROVED SINCE THE ENACTMENT OF
THE FOOD AND DRUGS LAW?"
By M. N. WEDEL and L. D. HAVENHILL.
5. "A FURTHER DISCUSSION OF MUNICIPAL OWNERSHIP OF WATER AND
LIGHT PLANTS."
By J. A. G. SHIRK.

VI.

NECROLOGY.

1. ROBERT J. BROWN.
2. JOHN J. JEWETT.
3. JAMES C. COOPER.
4. MARY BURGESS SAVAGE.
5. BERNARD BRYAN SMYTH.